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Wetland Delineation Report for Middle Mortandad Mesa Adjacent to Technical Area 55 at Los Alamos National Laboratory Title:

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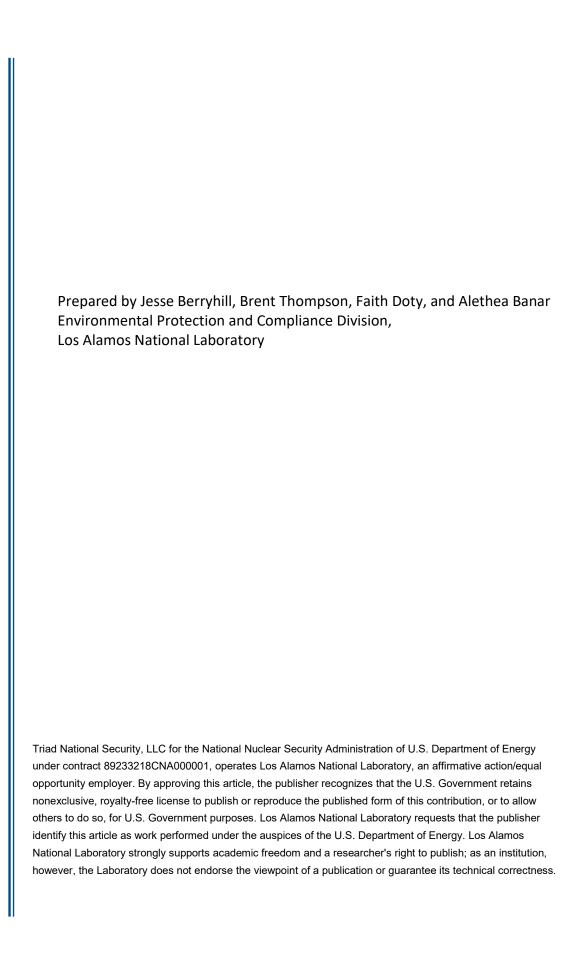
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July 2021

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ACRONYMS

GPS Global Positioning System

LANL Los Alamos National Laboratory

NPDES National Pollutant Discharge Elimination System

TA Technical Area

USAC United States Army Corps of Engineers

Introduction

This report provides the results of a wetland delineation conducted to support operational logistics for construction of a high-pressure water line that is planned to occur near a wetland at Los Alamos National Laboratory (LANL). The wetland reach is on the mesa edge in Technical Area (TA)-55 above the Mortandad Canyon watershed. This area has not been previously delineated; however, it drains to a canyon bottom where LANL updated a delineation in 2017 for the wetland adjacent to Technical Areas (TAs) 25, 48, and 55.

SITE DESCRIPTION

The wetland reach sits on the north edge of the mesa and drains north into Mortandad Canyon. The entire wetland is within the boundary of TA-55. The southern end of the wetland is within the urbanized area of TA-55. The remainder is a mixture of formerly disturbed and revegetated area and undisturbed area. The majority of water to this area is a manmade source from TA-55 NPDES Outfall 03A181 (LANL 2019). Portions of the wetland are overlapped by three potential release sites: 42-002(b), 42-004, and 55-011(c). Caution was taken while soil sampling and material from sampling pits was returned to its point of origin. Past disturbances in this area include asphalt paving, structures, fill/gravel, and deposition of building debris.

METHODS

LANL biologists conducted off-site preparatory work (online soil survey, reviewing of past reports, etc.) during the week of June 7–11, 2021 and conducted on-site fieldwork on June 15, 2021. All wetland delineation work was conducted in accordance of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual (USACE 1987) and the Arid West Regional supplement (USACE 2008).

A query of the National Wetland Plants List database yielded a New Mexico Specific 2016 Updated Wetland Plant List (Lichvar 2016) that was used as a reference for the site vegetation analysis. Vegetation lists for Los Alamos County (Keller 2011) and a handbook of wetland vegetation communities in New Mexico (Muldavin et al. 2000) were also consulted while identifying species and communities documented in the delineation. Prior wetland delineation reports for the upper Mortandad Canyon wetland (LANL 2013), the middle Mortandad Canyon wetland (USACE 2005), and the Wetland Delineation Report for Middle Mortandad Wetland Adjacent to Technical Area 35, 48 and 55 (LANL 2017) were also used as baselines and guides for this delineation.

Soil samples were collected according to methods in Appendix D Section 1 of the 1987 Corps Wetlands Delineations Manual (USAC 1987) and the Munsell Soil Color Book (Munsell Color 2010). Soil samples were taken with a 2 inch-diameter auger and inspected to determine physical properties (e.g. texture, color, structure) and hydric characteristics.

The wetland boundary was delineated by placing 21-inch wetland delineation pin flags along the wetland boundary (determined by wetland vegetation presence, soils and hydrology). Geospatial waypoints were collected along the boundary and at sample points using a Trimble Geo XT®

GPS device. Boundary points were downloaded and converted to a polygon shape file in ArcGIS.

Data from the delineation was recorded on Wetland Determination Data Form-Arid West Region forms (USACE 2008). Data sheets and digital photographs were taken at all sampling locations, and are included in Attachments A and B.

RESULTS

The wetland area is approximately 0.13 acres in size (Figure 1). This area has not been previously delineated; however, it drains north to Mortandad Canyon bottom where LANL updated a delineation in 2017 for the wetland adjacent to Technical Areas (TAs) 25, 48, and 55.

Tree species observed in this wetland include paper birch (Betula papyrifera [note: not documented in the county list and non-native]), Russian olive (Elaeagnus angustifolia), Siberian elm (Ulmus pumila), ponderosa pine (Pinus ponderosa), saltcedar (Tamarix ramosissima), Douglas fir (Pseudotsuga menziesii), chokecherry (Prunus virginiana), bluestem willow (Salix irrorata), and coyote willow (Salix exigua). Other wetland indicator species observed and recorded include: mountain rush (Juncus arcticus), longstyle rush (Juncus longistylis), grassleaf rush (Juncus marginatus), poverty rush (Juncus tenuis), bottlebrush sedge (Carex hystericina), cattail (Typha latifolia), and broom sedge (Carex scoparia).

Hydrology is active and evident; however, the source is manmade. The water consists of treated cooling tower blowdown originating from TA-55 NPDES Outfall 03A181 (LANL 2019) (Figure 1). Flow is intermittent from a pipe near the southern edge of the wetland (Figure 2) with daily discharges that range from 2 to 3.5 million gallons per year. Water flows from the outfall through an area of base course and disperses into several braided channels flowing to the north and to the canyon edge. If changes were made to the current outfall such as rerouting water to another facility, reuse, or discharge to a different outfall, the wetland would no longer receive water beyond local average annual precipitation (approximately 18.79 inches/year).

A United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey query was made for the area. The report generated by the area of interest query summarized the two soil types found in this area as "rock outcrop (124)" and "local very fine sandy loam (228)." Both categories are described as general, miscellaneous, and non-hydric. Subsurface parent material consists of volcanic tuff. The area has had human disturbance in the past including asphalt paving, structures, fill/gravel, and deposition of building debris.

Four soil samples were taken within and on the boundary of the wetland (sample points 1, 2, 3, and 5) and one soil sample was taken in an adjacent upland area (sample point 4). See photos of soil core samples in Attachment B. Saturated soil was encountered in all but the upland sample. Water was observed running through a well-drained substrate that included fill and gravel material from former disturbances. Indicators of hydric soils were present but not well defined. Soil sample 5 exhibited gleying and a reduced environment at the 3-4 inch depth. Decayed/ing organic matter including cattail and grass roots were observed in all samples taken within the wetland boundary. The soils were primarily composed of sand, gravel, organic matter, saturated and decaying tuff, and small amounts of clay. Soil sample 4 taken in the upland area, adjacent to

the wetland, displayed a texture and structure similar to those found in the wetland, but with dry conditions and lacking significant quantities of organic matter. Overall, the depth of soil is shallow with bedrock being encountered 2.5 to 7 inches below ground surface. Only soil sample 2 was excavated deeper, to 27 inches, before encountering cobble and large gravel.



Figure 1. Wetland Delineation Map.



Figure 2. NPDES Outfall 03A181.

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ATTACHMENT A: SITE PHOTOGRAPHS



Photo 1. Sample point 1, view east to west.



Photo 2. Soil Sample at Sample Point 1.



Photo 3. Sample point 2, view west to east.



Photo 4. Soil Sample at Sample Point 2.



Photo 5. Sample point 3 outside the fence, view east to west.



Photo 6. Soil Sample at Sample Point 3.



Photo 7. Sample Point 4, looking north



Photo 8. Soil Sample at Sample Point 4.



Photo 9. Sample Point 5, view west to east



Photo 10. Soil Sample at Sample Point 5

ATTACHMENT B: SITE FORMS

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: TA-55 Middle Morta	ndad Mesa		City/Cou	inty:LosAlam	os/LosAlamos	San	npling Date:()	6-15-20	21
Applicant/Owner:LANL/DOE				-	State:NM	San	npling Point:]	Ì	
Investigator(s):Jesse Berryhill, Bre	ent Thompson, Faith l	Doty, A.	Section,	Township, Ra	nge:R06E T19N				
Landform (hillslope, terrace, etc.): me	esa top/bench		Local re	elief (concave,	convex, none):conve	ex	Slop	oe (%): ~	30
Subregion (LRR):D - Interior Dese	rts	Lat:35.8	36		Long:-106.301		Datu	m:NAD	83
Soil Map Unit Name: USDA NRCS	Web Soil Survey: N	 M656			NWI clas	ssification	:None Liste	d	
Are climatic / hydrologic conditions o		NEO 30	ar? Yes	No ((If no, explain	in Remai	rks.)		
Are Vegetation Soil X	r Hydrology Sig	nificantly	disturbe	d? Are	"Normal Circumstanc	es" prese	nt? Yes 🕞	No (\circ
		turally pro	oblematic	:? (If ne	eeded, explain any ar	swers in	Remarks.)		
SUMMARY OF FINDINGS -		howing	sampl	ling point le	ocations, transe	cts, im	portant fea	atures,	etc.
Hydrophytic Vegetation Present?	Yes 🕟 No	0							
Hydric Soil Present?		•	Is	s the Sampled	l Area				
Wetland Hydrology Present?	Yes 🕟 No	0	W	vithin a Wetla	nd? Yes	•	No 🔿		
Remarks: Sampling location is a									
area of TA-55. The rer					ated area and undis	sturbed a	irea. Past di	sturbanc	ces
include asphalt paving	, structures, fill/grave	l, and bu	iilding d	lebris.					
VEGETATION									
Tree Chretum / Lles seientific nem		Absolute		int Indicator	Dominance Test v	workshee	et:		
Tree Stratum (Use scientific name	es.)	% Cover	Species	s? Status	Number of Domina That Are OBL, FAC			((A)
2.		7					.c. 1	,	(~)
3.					Total Number of De Species Across All		1	((B)
4.		-) .				ı.	,	(2)
1000 1000 1000 1000 1000 1000 1000 100	Total Cover:	%			 Percent of Domina That Are OBL, FAC 			0.0% (A/B)
Sapling/Shrub Stratum								.0 70 (/
1.Salix exigua		5	No	OBL	Prevalence Index			, b	
2					OBL species	95	Multiply x 1 =	95 95	
4.		-			FACW species	5	x 2 =	10	
5.		-	-	_	FAC species		x 3 =	0	
	Total Cover:	5 %		*	FACU species		x 4 =	0	
Herb Stratum					UPL species		x 5 =	0	
1 Typha latifolia		90	Yes	OBL	Column Totals:	100	(A)	105	(B)
² Epilobium spp.		5	No	FACW	Prevalence Ir	ndev = B	/Δ =	1.05	
3.					Hydrophytic Vege			1.03	
5.	*		-		X Dominance Te				
6.					× Prevalence Inc				
7.					Morphological				ng
8.							n a separate		
	Total Cover:	95 %			Problematic H	ydrophyti	c Vegetation	(Explain))
Woody Vine Stratum					¹Indicators of hydr	ic coil an	d wetland hy	drology n	nuet
1		-	-		be present.	ic soil air	u wellanu ny	ur ology 11	iiusi
2	Total Cover:	%			Hydrophytic				
					Vegetation	E 100			
% Bare Ground in Herb Stratum	0 % % Cover		_	0 %	Present?	Yes 🖲	No (>	
Remarks: Dense cattail domina	ted location, surface v	vater mo	oving thi	roughout.					
US Army Corps of Engineers									

OIL						Sampling Point: 1
Profile Description: (De	scribe to the dep	th needed to docu	ment the indicator or	confirm the	absence of	indicators.)
Depth N	1atrix	Redo	x Features			
(inches) Color (mo	oist) %	Color (moist)	%Type1	Loc ² T	exture ³	Remarks
0-3 10YR 4/4				*San	d	*(See Remarks)
				19 95		272
						v .
						**
						** <u>***********************************</u>
						·
						·
Type: C=Concentration,	The second secon		² Location: PL=Pore Li			
					220	n, Silt Loam, Silt, Loamy Sand, Sand
Hydric Soil Indicators: (A Histosol (A1)	ppiicable to all LR	· ·		II.		Problematic Hydric Soils: k (A9) (LRR C)
Histic Epipedon (A2)		Sandy Red Stripped M		Ļ		k (A10) (LRR B)
Black Histic (A3)			cky Mineral (F1)	F		Vertic (F18)
Hydrogen Sulfide (A4	ĭ		eyed Matrix (F2)	F		nt Material (TF2)
Stratified Layers (A5)	A	Depleted N	State and the state of the stat	F		plain in Remarks)
1 cm Muck (A9) (LRF			k Surface (F6)	L	_ Other (Ex	piair ir Keriarks)
Depleted Below Dark			Dark Surface (F7)			
Thick Dark Surface (A		The second contract of	pressions (F8)			
Sandy Mucky Minera	10703 CA	Vernal Poo	SURVEYOR TRANSPORT 1975 DAY	4	ndicators of h	hydrophytic vegetation and
Sandy Gleyed Matrix		veinarr or	ло (1 о)			drology must be present.
Restrictive Layer (if pres	3.01 3.02				notiuna ny	arorogy must be present.
Type:	serit).					
Depth (inches):				н	dric Soil Dre	esent? Yes No 🕡
	1 /1	a) maior materials d				
						4/4, some organic matter, grave
					dox feature	s in peds or along roots, no
surface crack	ing or salt crust,	thin much surfac	e of decayed organic	matter.		
IYDROLOGY						
Wetland Hydrology Indi	cators:				Secondar	ry Indicators (2 or more required)
Primary Indicators (any or	ne indicator is suff	icient)			Wate	er Marks (B1) (Riverine)
Surface Water (A1)		Salt Crus	t (B11)		Sedii	ment Deposits (B2) (Riverine)
High Water Table (A2	2)	Biotic Cru	120 0			Deposits (B3) (Riverine)
Saturation (A3)	2		overtebrates (B13)			nage Patterns (B10)
Water Marks (B1) (No	nriverine)	<u>▼10</u> 11 11 11 11 11 11 11 11 11 11 11 11 11	Sulfide Odor (C1)			Season Water Table (C2)
Sediment Deposits (E			Rhizospheres along Liv	ina Roots (C		Muck Surface (C7)
Drift Deposits (B3) (N	8.6		of Reduced Iron (C4)	ing receive (c		fish Burrows (C8)
			200	Coile (CG)		ration Visible on Aerial Imagery (C9)
Surface Soil Cracks ((9455-108)		on Reduction in Plowed	3015 (C6)		
Inundation Visible on	00000000	/) Uther (E)	plain in Remarks)			low Aquitard (D3)
Water-Stained Leave	s (B9)			-	FAC-	-Neutral Test (D5)
Field Observations:						
Surface Water Present?		No Depth (ii	4	-		
Water Table Present?	Yes 📵	No C Depth (ii		1		
Saturation Present? (includes capillary fringe)	Yes 🕡	No C Depth (ii	nches): Throughout	Wetland H	lydrology Pi	resent? Yes 🌘 No 🔘
Describe Recorded Data (NPDES Outfall 03A18	A STATE OF THE PARTY OF THE PAR	onitoring well, aerial	photos, previous inspec	ctions), if ava	ilable:	
Remarks:						
S Army Corps of Engineers						

Project/Site: TA-55 Middle Mortandad Mesa		City/Count	y:LosAlan	nos/LosAlamos	Sar	npling Date	:06-15-202	1
Applicant/Owner:LANL/DOE				State:NM	Sar	npling Point	:: 2	
Investigator(s):Jesse Berryhill, Brent Thompson, Faith	Doty, A	Section, T	ownship, Ra	ange:R06E T19N				
Landform (hillslope, terrace, etc.): mesa top/bench		Local reli	ef (concave,	convex, none):conv	/ex	S	lope (%): ~3	0
Subregion (LRR):D - Interior Deserts	Lat:35.8	36		Long:-106.301	committee control	 Da	tum:NAD 8	33
Soil Map Unit Name: USDA NRCS Web Soil Survey: N		entre.co			assification	:None Lis		
Are climatic / hydrologic conditions on the site typical for this	2000	ear? Yes (No (<u></u>				
	significantly			"Normal Circumstan		12	No (_
	naturally pr						, inot	
				eeded, explain any a				
SUMMARY OF FINDINGS - Attach site map s	showing	samplii	ng point l	ocations, trans	ects, im	portant f	eatures, e	etc.
Hydrophytic Vegetation Present? Yes 🌘 N	0 (
, , , ,	0 (6)	Ist	the Sample	d Area				
Wetland Hydrology Present? Yes 🕟 N	0 0		hin a Wetla		•	No 🔘		
Remarks: Soil sample taken south of outer fence, nor	thwest of	outfall, h	alfway bet	tween gravel and t	he fence.	The south	ern end of	the
wetland is within the urbanized area of TA							area and	
undisturbed area. Past disturbances include	e asphalt p	oaving, st	ructures, fi	ll/gravel, and buil	ding debr	is.		
/EGETATION								
Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test				
1.	70 COVCI	орескоз:	Oldida	Number of Domin			1 (A	4)
2.		S	·				T C	,
3.			-	Total Number of I Species Across A			1 (B	3)
4.							, ,-	
Total Cove	r: %		-	 Percent of Domin That Are OBL, FA 			00.0% (A	VB)
Sapling/Shrub Stratum	_	2.7		B 1 1 1 1			00.000	
1.Salix Exigua	5	No	OBL	Prevalence Inde			ply by:	
2. 3.				OBL species	25	x 1 =	25	
4.			-	FACW species	72	x 2 =	144	
5.	· · · · · · · ·	-		FAC species	3	x 3 =	9	
Total Cover	r: 5 %		*	FACU species		x 4 =	0	
Herb Stratum				UPL species		x 5 =	0	
^{1.} Typha latifolia	20	No	OBL	Column Totals:	100	(A)	178	(B)
² Epilobium spp.	10	No	FACW		2000	/A	1.70	
3.Carex scoparia	60	Yes	FACW	Prevalence			1.78	
4. Agrostis gigantea	2	No	FACW	Hydrophytic Veg Mydrophytic Veg Dominance 1				
5.				× Prevalence II				
6. 7.				Morphologica		2	le supporting	7
8.						on a separa		,
Total Cover	r 00 .		·	Problematic	Hydrophyti	c Vegetatio	n¹ (Explain)	
Woody Vine Stratum	92 %							
1.Parthenocissus quinquefolia	3	No	FAC	¹Indicators of hyd	tric soil an	d wetland h	nydrology mu	ust
2.				be present.				
Total Cover	r: 3 %			Hydrophytic Vegetation				
% Bare Ground in Herb Stratum 0 % % Cover	r of Biotic C	Crust () %	Present?	Yes (No	0	
Remarks: Densely vegetated loaction with no tree c	omponen	t and satu	rated soils	Surface water no	t present.			
Delibely vegetated leaderen with no acce	omponen	t tille bute	racea sens.	. Builde water ne	e present.			

(inches)	Matrix Color (moist)	%	Color (moist)	edox Feat		Loc ²	Texture ³	Remarks
0-3	10YR 3/2	-		N/S			Sand	Rhizomes and roots
4-6	10YR 4/3		-				Sand	Fine roots, sandy, pea-size grav
7-9	10YR 4/3	- 20	2	286			Sand	Small amounts of clay or incre
10-14	YR 5 or 4/2					-	Sandy Loam	Slightly increased clay or organ
15-21	10YR 2/2		-			-	Sandy Loam	More cohesive, big mottles wh
22-27	10TR 2/2 10YR 2/2							fewer particles of saturated tuff
22-21	101K 2/2		,				Sandy Loam	lewer particles of saturated turn
	Concentration, D=De					10.00	RC=Root Chann	
						, Clay Lo	224 22	oam, Silt Loam, Silt, Loamy Sand, Sand
Histoso	Indicators: (Applicat	ole to all LR		wise noted ledox (S5)	1.)			or Problematic Hydric Soils [*] : 1uck (A9) (LRR C)
20000 to 00	Epipedon (A2)			d Matrix (S	66)			fluck (A10) (LRR B)
	Histic (A3)			Mucky Mir				ed Vertic (F18)
Hydrog	gen Sulfide (A4)		Loamy	Gleyed Ma	atrix (F2)		Red P	arent Material (TF2)
	ed Layers (A5) (LRR	C)		d Matrix (Other	Explain in Remarks)
	luck (A9) (LRR D)	o (A11)		Dark Surfa				
	ed Below Dark Surfac Dark Surface (A12)	e (ATT)		Depressio	ırface (F7) ns (F8)			
1,000,000,000,000,000	Mucky Mineral (S1)		2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Pools (F9)			4Indicators	of hydrophytic vegetation and
Sandy	Gleyed Matrix (S4)			191 12			wetland	hydrology must be present.
estrictive	Layer (if present):							
Type: C	obble/large gravel							
Type.								
Depth (ii	nches): 27 inches							Present? Yes No 💿
Depth (ii Remarks: S	nches): 27 inches Saturated througho						saturated tuf	Present? Yes No and other porous overburden that ganic matter increasing w/ depth b
Depth (ii Remarks: S	nches): 27 inches Saturated througho	n, approx	24-in water tab	le/refill	depth, sandy	through	saturated tuff out, clay or or	and other porous overburden that
Depth (ii Remarks: S V r	nches): 27 inches Saturated throughovere breaking downot at a significant	n, approx	24-in water tab	le/refill	depth, sandy	through	saturated tuff out, clay or or	and other porous overburden that
Depth (ii Remarks: S V r	nches): 27 inches Saturated throughovere breaking downot at a significant	n, approx texture pe	24-in water tab	le/refill	depth, sandy	through	saturated tuff out, clay or or ogether.	and other porous overburden that
Depth (ii Remarks: \$ V r YDROLO Vetland H	nches): 27 inches Saturated throughowere breaking downot at a significant	n, approx texture pe	24-in water tab rcentage- just e	le/refill	depth, sandy	through	saturated tuff sout, clay or or ogether.	and other porous overburden that ganic matter increasing w/ depth b
Depth (ii Remarks: S V T T T T T T T T T T T T T	nches): 27 inches Saturated throughowere breaking downot at a significant OGY ydrology Indicators	n, approx texture pe	24-in water tab reentage- just e	le/refill	depth, sandy hold the so	through	saturated tuff out, clay or or ogether.	and other porous overburden that ganic matter increasing w/ depth b
Depth (in Remarks: Some Primary Individual Control of C	nches): 27 inches Saturated throughovere breaking downot at a significant OGY ydrology Indicators licators (any one indicators (any one indicator	n, approx texture pe	24-in water tab	ole/refill (enough to	depth, sandy hold the so	through	saturated tufficult, clay or	and other porous overburden that ganic matter increasing w/ depth b dary Indicators (2 or more required) (ater Marks (B1) (Riverine)
Depth (in Remarks: Some Primary Individual Control of C	nches): 27 inches Saturated throughovere breaking downot at a significant OGY ydrology Indicators licators (any one indicators (any one indicator	n, approx texture pe	24-in water tab rcentage- just e ficient) Salt C Biotic	ole/refill on ough to rust (B11)	depth, sandy hold the so	through	saturated tufficut, clay or	and other porous overburden that ganic matter increasing w/ depth b dary Indicators (2 or more required) (ater Marks (B1) (Riverine) ediment Deposits (B2) (Riverine)
Depth (in Remarks: Solution of the Period Control of the Period Co	nches): 27 inches Saturated throughovere breaking downot at a significant OGY ydrology Indicators licators (any one indicators (any one indicator	n, approx texture pe : : cator is suff	24-in water tab reentage- just e ficient) Salt C Biotic Aquati Hydrog	ole/refill of enough to rust (B11) Crust (B12 c Inverteb gen Sulfid	depth, sandy hold the so 2) rates (B13) e Odor (C1)	through	saturated tufficout, clay or	and other porous overburden that ganic matter increasing w/ depth by depth by dary Indicators (2 or more required) (ater Marks (B1) (Riverine) ediment Deposits (B2) (Riverine) rift Deposits (B3) (Riverine)
Depth (ii Remarks: § V YDROLO Vetland H Primary Ind Surface High W X Satural Water Sedime	nches): 27 inches Saturated throughovere breaking downot at a significant DGY ydrology Indicators licators (any one indice water (A1) /ater Table (A2) tion (A3) Marks (B1) (Nonrivelent Deposits (B2) (No	n, approx texture pe : cator is suff rine)	24-in water tab rcentage- just e ficient) Salt C Biotic Aquati Hydrog Oxidiz	rust (B11) Crust (B12) Crust (B13) Crust (B13) Crust (B16) Crust (B16) Crust (B16) Crust (B16)	depth, sandy hold the so 2) rates (B13) e Odor (C1) pheres along	through	saturated tufficout, clay or	and other porous overburden that ganic matter increasing w/ depth by depth by depth by dary Indicators (2 or more required) (ater Marks (B1) (Riverine) ediment Deposits (B2) (Riverine) rainage Patterns (B10)
Depth (ii Remarks: \$ V YDROLO Vetland H Primary Ind Surface High W X Satural Water Sedime	nches): 27 inches Saturated throughovere breaking downot at a significant OGY ydrology Indicators dicators (any one indicators (any one indicato	n, approx texture pe : cator is suff rine)	24-in water tab rcentage- just e icient) Salt C Biotic Aquati Hydrog Oxidiz Preser	rust (B11) Crust (B12) Crust (B13) C Inverteb gen Sulfid ed Rhizos nce of Rec	depth, sandy hold the so 2) rates (B13) e Odor (C1) pheres along duced Iron (C-	through il bore to Living Ro	Secon	and other porous overburden that ganic matter increasing w/ depth by depth
Depth (ii Remarks: S V T YDROLO Vetland H Primary Ind Surface Water Sedime Drift De Surface	nches): 27 inches Saturated throughovere breaking down of at a significant OGY ydrology Indicators licators (any one indicators (any one indicators (A1) //ater Table (A2) tion (A3) Marks (B1) (Nonriverent Deposits (B2) (Noriverent (B3) (Nonriverent (B3) (Nonr	n, approx texture pe cator is suff rine) priverine)	24-in water tab rcentage- just e ficient) Salt C Biotic Aquati Hydro Oxidiz Preser Recen	rust (B11) Crust (B12) Crust (B13) C Inverteb gen Sulfid ed Rhizos nce of Rec t Iron Rec	depth, sandy hold the so 2) rates (B13) e Odor (C1) spheres along duced Iron (C- fluction in Plow	through il bore to Living Ro	Secon	and other porous overburden that ganic matter increasing w/ depth by depth
Depth (ii Remarks: S T T T T T T T T T T T T T	nches): 27 inches Saturated throughovere breaking down of at a significant OGY ydrology Indicators dicators (any one indicators (any one indicators (A1) //ater Table (A2) tion (A3) Marks (B1) (Nonriverent Deposits (B2) (Noriverent Castors (B3) (Noriverent Castors (B3) (Noriverent Castors (B6)	n, approx texture pe cator is suff rine) priverine)	24-in water tab rcentage- just e ficient) Salt C Biotic Aquati Hydro Oxidiz Preser Recen	rust (B11) Crust (B12) Crust (B13) C Inverteb gen Sulfid ed Rhizos nce of Rec t Iron Rec	depth, sandy hold the so 2) rates (B13) e Odor (C1) pheres along duced Iron (C-	through il bore to Living Ro	Secon Sec	and other porous overburden that ganic matter increasing w/ depth by definition of the control of the contro
Depth (ii Remarks: S Y Y Y Y Y Y Y Y Y Y Y Y Y	nches): 27 inches Saturated throughovere breaking down of at a significant OGY ydrology Indicators dicators (any one indicators (any one indicators (A2) tion (A3) Marks (B1) (Nonriverent Deposits (B2) (Noriverent Deposits (B3) (Noriverent Case) (Noriverent Case) e Soil Cracks (B6) tion Visible on Aerial Stained Leaves (B9)	n, approx texture pe cator is suff rine) priverine)	24-in water tab rcentage- just e ficient) Salt C Biotic Aquati Hydro Oxidiz Preser Recen	rust (B11) Crust (B12) Crust (B13) C Inverteb gen Sulfid ed Rhizos nce of Rec t Iron Rec	depth, sandy hold the so 2) rates (B13) e Odor (C1) spheres along duced Iron (C- fluction in Plow	through il bore to Living Ro	Secon Sec	and other porous overburden that ganic matter increasing w/ depth by depth
Depth (ii Remarks: \$ V T	nches): 27 inches Saturated throughovere breaking down of at a significant OGY ydrology Indicators dicators (any one indicators (any one indicators (any one indicators (any one indicators (B2) (Nonriverent Deposits (B2) (Nonriverent Deposits (B3) (Nonriverent Caposits (B3) (Nonriverent Ca	n, approx texture pe cator is suff crine) priverine) brine)	24-in water tab rcentage- just e ficient) Salt C Biotic Aquati Hydro Oxidiz Preser Recen 7) Other	rust (B11) Crust (B11) Crust (B1: c Inverteb gen Sulfid ed Rhizos nce of Rec t Iron Rec (Explain ir	2) rates (B13) e Odor (C1) spheres along duced Iron (C- fuction in Plow	through il bore to Living Ro	Secon Sec	and other porous overburden that ganic matter increasing w/ depth by definition of the control of the con
Depth (iii Remarks: \$ V T	nches): 27 inches Saturated throughovere breaking down to at a significant OGY ydrology Indicators dicators (any one indicators (any one indicators (any one indicators (B2)) Marks (B1) (Nonriverent Deposits (B2)) Morriverent Deposits (B3) (Nonriverent Deposits (B3)) Morriverent Deposits (B3) (Nonriverent Deposits (B3)) Morriverent Deposits (B3) Morrive	n, approx texture pe cator is sufficiency or ine) Imagery (B	24-in water tab reentage- just e icient) Salt C Biotic Aquati Hydro Oxidiz Presei Recen 7) Other	rust (B11) Crust (B12) Crust (B13) C Inverteb gen Sulfid ed Rhizos nce of Rec t Iron Rec (Explain in	2) prates (B13) e Odor (C1) spheres along duced Iron (C- fuction in Plow n Remarks)	through il bore to Living Ro	Secon Sec	and other porous overburden that ganic matter increasing w/ depth by definition of the control of the contro
Depth (iii Remarks: \$ V T	nches): 27 inches Saturated throughovere breaking downot at a significant DGY ydrology Indicators licators (any one indicators (any one indicato	n, approx texture pe cator is sufficiency brine) Imagery (Bures (a)	24-in water tab rcentage- just e ficient) Salt C Biotic Aquati Hydro Oxidiz Preser Recen 7) Other No Deptr No Deptr	rust (B11) Crust (B11) Crust (B1) c Inverteb gen Sulfid ed Rhizos nce of Rec (Explain in	2) prates (B13) e Odor (C1) spheres along duced Iron (C- fuction in Plow n Remarks) 0-3 in 0-3 in	through il bore to Living Ro 1) ved Soils	Secon Sec	and other porous overburden that ganic matter increasing w/ depth by definition of the control of the con
Depth (ii demarks: \$ V T	nches): 27 inches Saturated throughovere breaking down of at a significant OGY ydrology Indicators licators (any one indice Water (A1) //ater Table (A2) tion (A3) Marks (B1) (Nonriverent Deposits (B2) (Noriverent Deposits (B3) (Nonriverent Deposits (B4) (Noriverent Office (B6)) tion Visible on Aerial Stained Leaves (B9) orvations: ater Present? Present?	n, approx texture pe cator is sufficiency brine) Imagery (Bures (a)	24-in water tab rcentage- just e ficient) Salt C Biotic Aquati Hydro Oxidiz Preser Recen 7) Other No Deptr No Deptr	rust (B11) Crust (B11) Crust (B1) c Inverteb gen Sulfid ed Rhizos nce of Rec (Explain in	2) prates (B13) e Odor (C1) spheres along duced Iron (C- fuction in Plow n Remarks)	Living Ro	saturated tufficut, clay or	and other porous overburden that ganic matter increasing w/ depth by definition of the control of the con
Depth (ii) Itemarks: S V IT IT IT IT IT IT IT IT IT	nches): 27 inches Saturated throughovere breaking down of at a significant DGY ydrology Indicators gidicators (any one indicators (any one indi	n, approx texture pe cator is suff rine) inriverine) rine) lmagery (B	24-in water tab rcentage- just e icient) Salt C Biotic Aquati Hydro; Oxidiz Preser Recen 70 Other No Deptt No Deptt	rust (B11) Crust (B11) Crust (B1) c Inverteb gen Sulfid ed Rhizos nce of Rec t Iron Rec (Explain in	2) prates (B13) e Odor (C1) pheres along duced Iron (C- duction in Plov n Remarks) 0-3 in 0-3 in Througho	Living Ro	saturated tufficut, clay or	and other porous overburden that ganic matter increasing w/ depth by depth
Depth (ii Remarks: S Y YDROLC Vetland H: YSurface Water Sedman Drift De Surface Water Gride dobses Surface Water S	nches): 27 inches Saturated throughovere breaking down of at a significant OGY ydrology Indicators dicators (any one indicators (any one indicat	n, approx texture pe cator is suff rine) inriverine) rine) lmagery (B	24-in water tab rcentage- just e icient) Salt C Biotic Aquati Hydro; Oxidiz Preser Recen 70 Other No Deptt No Deptt	rust (B11) Crust (B11) Crust (B1) c Inverteb gen Sulfid ed Rhizos nce of Rec t Iron Rec (Explain in	2) prates (B13) e Odor (C1) pheres along duced Iron (C- duction in Plov n Remarks) 0-3 in 0-3 in Througho	Living Ro	saturated tufficut, clay or	and other porous overburden that ganic matter increasing w/ depth by depth
Depth (ii Remarks: S Y YDROLC Wetland H: Surface Water Sedima Drift De Surface Unuda Water Sedima Drift De Surface Water Table Seduration Includes co	nches): 27 inches Saturated throughovere breaking down of at a significant DGY ydrology Indicators gidicators (any one indicators (any one indi	n, approx texture pe cator is suff rine) inriverine) rine) lmagery (B	24-in water tab rcentage- just e icient) Salt C Biotic Aquati Hydro; Oxidiz Preser Recen 70 Other No Deptt No Deptt	rust (B11) Crust (B11) Crust (B1) c Inverteb gen Sulfid ed Rhizos nce of Rec t Iron Rec (Explain in	2) prates (B13) e Odor (C1) pheres along duced Iron (C- duction in Plov n Remarks) 0-3 in 0-3 in Througho	Living Ro	saturated tufficut, clay or	and other porous overburden that ganic matter increasing w/ depth by depth
Depth (ii Remarks: \$ V YDROLO Vetland H: Primary Ind X Surface High W X Satural Water Sedime Ununda Water- Field Obse Surface Water Table Saturation I includes ca Describe R NPDES O	nches): 27 inches Saturated throughovere breaking down of at a significant DGY ydrology Indicators gidicators (any one indicators (any one indi	n, approx texture pe cator is suff rine) inriverine) rine) lmagery (B	24-in water tab rcentage- just e icient) Salt C Biotic Aquati Hydro; Oxidiz Preser Recen 70 Other No Deptt No Deptt	rust (B11) Crust (B11) Crust (B1) c Inverteb gen Sulfid ed Rhizos nce of Rec t Iron Rec (Explain in	2) prates (B13) e Odor (C1) pheres along duced Iron (C- duction in Plov n Remarks) 0-3 in 0-3 in Througho	Living Ro	saturated tufficut, clay or	and other porous overburden that ganic matter increasing w/ depth by the dary Indicators (2 or more required) (ater Marks (B1) (Riverine) (B1) (Riverine) (B2) (Riverine) (B3) (Riverine) (B10) (B3) (Riverine) (B10) (B3) (B3) (B3) (B3) (B3) (B3) (B3) (B3
Depth (ii Remarks: \$ V YDROLO Vetland H: Primary Ind X Surface High W X Satural Water Sedime Ununda Water- Field Obse Surface Water Table Saturation I includes ca Describe R NPDES O	nches): 27 inches Saturated throughovere breaking down of at a significant DGY ydrology Indicators gidicators (any one indicators (any one indi	n, approx texture pe cator is suff rine) inriverine) rine) lmagery (B	24-in water tab rcentage- just e icient) Salt C Biotic Aquati Hydro; Oxidiz Preser Recen 70 Other No Deptt No Deptt	rust (B11) Crust (B11) Crust (B1) c Inverteb gen Sulfid ed Rhizos nce of Rec t Iron Rec (Explain in	2) prates (B13) e Odor (C1) pheres along duced Iron (C- duction in Plov n Remarks) 0-3 in 0-3 in Througho	Living Ro	saturated tufficut, clay or	and other porous overburden that ganic matter increasing w/ depth by the dary Indicators (2 or more required) (ater Marks (B1) (Riverine) (B1) (Riverine) (B2) (Riverine) (B3) (Riverine) (B10) (B3) (Riverine) (B10) (B3) (B3) (B3) (B3) (B3) (B3) (B3) (B3

Project/Site: TA-55 Middle Mortane	dad Mesa		City/County	y:LosAlam	os/LosAlamos	Sam	pling Date:()	6-15-20	21
Applicant/Owner:LANL/DOE					State:NM	Sam	pling Point:	3	
Investigator(s): Jesse Berryhill, Bren	t Thompson, Faith I	Doty, A. S	Section, To	ownship, Rar	nge:R06E T19N		ų.		
Landform (hillslope, terrace, etc.): mes	a top/bench		Local relie	f (concave, o	convex, none):none		Slo	pe (%): ~	-20
Subregion (LRR):D - Interior Deserts	S	Lat:35.86	5		Long:-106.301		Datu	m:NAD	83
Soil Map Unit Name: USDA NRCS V	NAC AND	 M656	550		NWI cla	ssification	:None Liste		
Are climatic / hydrologic conditions on		170 V	r? Yes G	No C				-	
99-26 1937		nificantly o			Normal Circumstan		S 500 5	No	
		turally prob			eded, explain any a			140	
SUMMARY OF FINDINGS - A								atures	etc
				9 0		, , , , , , , , , ,			0.0.
Hydrophytic Vegetation Present?	Yes 🕟 No								
Hydric Soil Present?	10.00	•		he Sampled			_		
Wetland Hydrology Present?				hin a Wetlar			No ()	1 1.	2.1
Remarks: Soil sample taken outside									
the urbanized area of TA disturbances include asp						area and	undisturbe	d area. I	Past
distarbances merade asp	man paving, su detu	ics, iiii gi	avei, and	r buriding c	CO113.				
VEGETATION									
		bsolute	Dominant	Indicator	Dominance Test	workshee	t:		
Tree Stratum (Use scientific names	.)	% Cover	Species?	Status	Number of Domina	ant Specie	s		
1					That Are OBL, FA	CW, or FA	C: 1	((A)
2.					Total Number of D	ominant			
3		7.0			Species Across Al	l Strata:	1		(B)
4					Percent of Domina				
Sapling/Shrub Stratum	Total Cover:	%			That Are OBL, FA	CW, or FA	C: 100).0% ((A/B)
1.					Prevalence Index	workshe	et:		
2.					Total % Cove	r of:	Multipl	y by:	
3.					OBL species	100	x 1 =	100	
4.					FACW species		x 2 =	0	
5					FAC species		x 3 =	0	
Herb Stratum	Total Cover:	%			FACU species		x 4 =	0	
		100	Yes	OBL	UPL species		x 5 =	0	
1. Typha latifolia 2.		100	1 62	OBL	Column Totals:	100	(A)	100	(B)
3.					Prevalence I	ndex = B/	A =	1.00	
4.					Hydrophytic Veg	etation Inc	dicators:		
5.				S	X Dominance To	est is >50%	6		
6.					× Prevalence In				
7.					Morphologica				ng
8.					Problematic H		n a separate	50	,
\Mandy\\inn Ctrot	Total Cover:	100%			Froblematic F	iyai opi iytit	vegetation	(Exhigili)	,
Woody Vine Stratum					¹ Indicators of hyd	ric soil and	d wetland hv	drology r	nust
1. 2.					be present.		,		
	Total Cover:	%			Hydrophytic				
ov Barro Carro dia Ulari Officia					Vegetation				
% Bare Ground in Herb Stratum		of Biotic Cr	ust U	· %	Present?	Yes 📵	No ()	
Remarks: Dense cattail dominate	d stand.								
US Army Corps of Engineers									

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SOIL									Sampling Point	:: 3
Profile Des	scription: (Descril	e to the dep	th needed to do	ument the	indicator or	confirm	the ab	sence of i	ndicators.)	
Depth	Matrix		Re	dox Features	5	700-17		20.0		
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Text	ure ³	Rema	arks
0-3	N/A						N/A		(see Remarks)	
									19	
<u> </u>									19	
-									19	
-						-	·		Y-	
-	-									
-										
1								200 00	X-22-7	
	Concentration, D=D	15 mm			: PL=Pore L	11 <u>2</u> 00				my Cond Cond
	Indicators: (Applic		100		iliuy Loaili, (Jay Loa			n, Silt Loam, Silt, Loar Problematic Hydric Se	
Histose	DI 2015 20	able to all LR	Ks, unless otherw Sandy Re	175.0					(A9) (LRR C)	лі5,
100000 00 00	Epipedon (A2)			Matrix (S6)					(A10) (LRR B)	
	Histic (A3)			lucky Minera	l (F1)				/ertic (F18)	
Hydrog	gen Sulfide (A4)		Loamy G	leyed Matrix	(F2)			Red Parer	nt Material (TF2)	
Stratifie	ed Layers (A5) (LR	R C)	Depleted	Matrix (F3)				Other (Exp	olain in Remarks)	
	luck (A9) (LRR D)			ark Surface						
	ed Below Dark Surf	ace (A11)		Dark Surfac						
Ordonescu.	Dark Surface (A12)	١.	Vernal P	epressions (F8)		⁴ Indi	cators of h	ydrophytic vegetation	and
	Mucky Mineral (S1 Gleyed Matrix (S4)		Veillai P	0015 (F3)					drology must be prese	
	Layer (if present)	1								
Type:Ro	309									
***	nches): 3 inches						Hydri	c Soil Pre	esent? Yes	No 🕡
	· · · · · · · · · · · · · · · · · · ·	out Cattail	roots and decay	ing organi	matter de	rk colo			lling but not sulph	17.00 15.11.1
									ediment washing i	
	rapped in organic					PE	,,			8
HYDROL	DGY									
Wetland H	ydrology Indicator	rs:						Secondar	y Indicators (2 or mo	re required)
Primary Inc	licators (any one in	dicator is suff	cient)					Wate	r Marks (B1) (Riveri r	ne)
X Surface	e Water (A1)		Salt Cru	ıst (B11)				Sedir	ment Deposits (B2) (F	Riverine)
High W	/ater Table (A2)		Biotic C	rust (B12)				Drift I	Deposits (B3) (Riveri	ne)
X Satura	tion (A3)		Aquatic	Invertebrate	es (B13)			Drain	age Patterns (B10)	
Water	Marks (B1) (Nonri v	rerine)	Hydrog	en Sulfide O	dor (C1)			Dry-S	Season Water Table (C2)
Sedime	ent Deposits (B2) (I	Nonriverine)	Oxidize	d Rhizosphe	res along Li	ving Roc	ots (C3)	X Thin	Muck Surface (C7)	
Drift De	eposits (B3) (Nonri	verine)	Presen	ce of Reduce	ed Iron (C4)				fish Burrows (C8)	
A. C.	e Soil Cracks (B6)			Iron Reducti		d Soils (C6)		ation Visible on Aeria	al Imagery (C9)
	tion Visible on Aeri		7) Other (I	Explain in Re	emarks)				ow Aquitard (D3)	
	Stained Leaves (B9	9)						FAC-	Neutral Test (D5)	
Field Obse										
	ater Present?			(inches):	0-3 in	4				
Water Table		Yes 💿	No O Depth	(inches):	0-3 in	_				
Saturation I		Yes (No O Depth	(inches): T	hroughout	Wetl	and Hvo	Irology Pr	esent? Yes (•	No (
	apillary fringe) ecorded Data (stre:	am gauge, mo	onitoring well, aeri	al photos, pr	evious inspe					
	utfall 03A181 flo		ntermonalistic Colored State (Special State Colored Special Sp			water to the Park		a province (see)		
Remarks:	and the second s									
IS Amore Com	ps of Engineers									
D MILLY COL	be of Euglifeers									

Applicant/Ounger ANT DOD	ng Date:06-15-2	2021
Applicant/Owner:LANL/DOE State:NM Samplin	g Point: 4	
Investigator(s): Jesse Berryhill, Brent Thompson, Faith Doty, A. Section, Township, Range: R06E T19N	N. Santa	
Landform (hillslope, terrace, etc.): mesa top/bench Local relief (concave, convex, none): none	Slope (%):	~20
Subregion (LRR):D - Interior Deserts Lat:35.86 Long:-106.301	Datum:NAI	D 83
Soil Map Unit Name: USDA NRCS Web Soil Survey: NM656 NWI classification: No	ne Listed	
Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)		
Are Vegetation Soil Or Hydrology significantly disturbed? Are "Normal Circumstances" present?		0
Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Ren		
SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, impor	tant features	s, etc.
Hydrophytic Vegetation Present? Yes ⋒ No ⑥		
Hydric Soil Present? Yes No (a Is the Sampled Area		
Wetland Hydrology Present? Yes No Within a Wetland? Yes No	•	
Remarks: The southern end of the wetland is within the urbanized area of TA-55. The remainder is a mixture of f	ormerly disturl	bed/
revegetated area and undisturbed area. Past disturbances include asphalt paving, structures, fill/gravel,	and building de	ebris.
A/FOETATION		
VEGETATION About to Desirant to find the Control of		
Absolute Dominant Indicator Tree Stratum (Use scientific names.) Absolute Dominant Indicator Species? Status Number of Deminant Species		
1. Pinus ponderosa 80 Yes FACU Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
2. Total Number of Dominant		
3. Species Across All Strata:	2	(B)
4. Percent of Dominant Species	3000	
Total Cover: 80 % Sapling/Shrub Stratum	50.0 %	(A/B)
1. Prunus virginiana 10 No FAC Prevalence Index worksheet:		
2. Total % Cover of:	Multiply by:	_
3. OBL species x	1 = 0	
4. FACW species 8 x	2 = 16	
	3 = 30	
Harb Stratum	4 = 320)
1 Aquartic aig grates	5 = 25	(D)
2. Elymus elymoides 5 No UPL Column Totals: 103 (A	391	(B)
3. Prevalence Index = B/A =	3.80)
4. Hydrophytic Vegetation Indica	itors:	
5. Dominance Test is >50%		
6. Prevalence Index is ≤3.0¹		
7. Morphological Adaptations data in Remarks or on a		ting
8. Problematic Hydrophytic Ve		in)
Total Cover: 13 %	gotation (Explai	,
1. Indicators of hydric soil and we	etland hydrology	must
2. be present.		
Total Cover: % Hydrophytic	No 📵	
Vegetation		
% Bare Ground in Herb Stratum 10 % % Cover of Biotic Crust 0 % Vegetation Present? Yes		
% Bare Ground in Herb Stratum 10 % % Cover of Biotic Crust 0 % Vegetation Present? Yes C		
% Bare Ground in Herb Stratum 10 % % Cover of Biotic Crust 0 % Vegetation Present? Yes		
% Bare Ground in Herb Stratum 10 % % Cover of Biotic Crust 0 % Vegetation Present? Yes C		
% Bare Ground in Herb Stratum 10 % % Cover of Biotic Crust 0 % Vegetation Present? Yes Cover of Biotic Crust 5 % Wegetation Present? Yes Cover of Biotic Crust 5 % Note that the West of the Wetland area. Wetland boundary identifies the Wetland Biotic Crust 5 % Note that the Wetland Biotic Cr		

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	Matrix Color (moist)	%	Color	(moist)	Features %	Type ¹	Loc ²	Textu	ıre ³	Remarks	
(inches)			- September 1	(IIIOISI)		Type	LOC-			-	
0-7	10YR 5/4	100	none					Sandy Lo) all	(see remarks)	
Type: C=	Concentration, D=Dep	letion PM	1=Reduce	d Matriy	2l ocation	· DI –Dore	Lining F	PC-Post (Channel, M	<i>A</i> −Matriv	
A	and the second s						100 mm			ı, Silt Loam, Silt, Loamy Sar	nd, Sand
	Indicators: (Applicab	200	20.					200	725	Problematic Hydric Soils:	
Black I Hydrog Stratifi	ol (A1) Epipedon (A2) Histic (A3) gen Sulfide (A4) ed Layers (A5) (LRR 0 //uck (A9) (LRR 0)	c)		Sandy Redo Stripped Ma Loamy Muc Loamy Gley Depleted M Redox Dark	atrix (S6) ky Minera ved Matrix atrix (F3)	(F2)		2 F	2 cm Muck Reduced V Red Paren	(A9) (LRR C) (A10) (LRR B) /ertic (F18) t Material (TF2) olain in Remarks)	
Thick [Sandy Sandy	ed Below Dark Surface Dark Surface (A12) Mucky Mineral (S1) Gleyed Matrix (S4)	e (A11)		Depleted D Redox Dep Vernal Pool	ressions (l				- m - 18	ydrophytic vegetation and Irology must be present.	
	Layer (if present):										
Type: R	ock nches):6-7 in								man puntan		_
Remarks:	l-inch approximate							om soil p	oit, dry. 6	-7 inches to bedrock, un	
Remarks:] t s	l-inch approximate hroughout, sandy a structure, soil fell ap matter	nd gritty.	gravel/g	rit from b	irdseed s	ize to gra	ape-size	om soil p	oit, dry. 6 oine need		iform y/no
Remarks:] t S T YDROLO	l-inch approximate hroughout, sandy a structure, soil fell ap matter	nd gritty.	gravel/g	rit from b	irdseed s	ize to gra	ape-size	om soil p d, some p hin the w	oit, dry. 6 oine need vetlands-l	i-7 inches to bedrock, un les in top 2-3 inches, dry	iform y/no nic
Remarks:] t YDROLO Wetland H	l-inch approximate hroughout, sandy a structure, soil fell ap matter OGY	nd gritty, part once	gravel/g removed	rit from b	irdseed s	ize to gra	ape-size	om soil p d, some p hin the w	oit, dry. 6 oine need vetlands-l	1-7 inches to bedrock, un les in top 2-3 inches, dry but dry and lacking orga	iform y/no nic
Remarks:] t YDROLO Wetland H Primary Inc Surface High W Satura	l-inch approximate hroughout, sandy as structure, soil fell apparter OGY ydrology Indicators: dicators (any one indicators (any one indicators) Water Table (A2) tion (A3)	nd gritty, part once	gravel/g removed	grit from b I, sedimen Salt Crust Biotic Crus Aquatic In	(B11) st (B12) vertebrate	ize to gra nilar to th	ape-size	om soil p d, some p hin the w	sit, dry. 6 sine need vetlands-l Secondar Water Sedin Drift [Drain:	1-7 inches to bedrock, un les in top 2-3 inches, dry but dry and lacking orga y Indicators (2 or more requ r Marks (B1) (Riverine) nent Deposits (B2) (Riverine) age Patterns (B10)	iform y/no nic
YDROLC Wetland H Primary Inc Surfac High W Satura Water Sedim Drift Do Surfac	I-inch approximate hroughout, sandy as structure, soil fell approximater DGY ydrology Indicators: dicators (any one indicators (any one indicators (any one indicators (A1)) water Table (A2) tion (A3) Marks (B1) (Nonriversent Deposits (B2) (Nonriverse Soil Cracks (B6) tion Visible on Aerial I	nd gritty, part once ator is suf	gravel/gremoved	grit from b I, sedimen Salt Crust Biotic Crus	(B11) st (B12) vertebrate Sulfide Oc Rhizosphe of Reduce n Reducti	ize to granilar to the state of	ape-sized hose wit Living Ro	om soil rdd, some rhin the w	Secondar Water Drift [Drain: Crayfi Satur	1-7 inches to bedrock, un les in top 2-3 inches, dry but dry and lacking orga y Indicators (2 or more requ r Marks (B1) (Riverine) nent Deposits (B2) (Riverine)	uiform y/no nic uired)
YDROLC YUROLC YUROLC Wetland H Primary Inc Surfac High W Satura Water Sedim Drift Do Surfac Inunda Water-	I-inch approximate hroughout, sandy as structure, soil fell approximate hroughout, sandy as structure, soil fell approximation. OGY ydrology Indicators: dicators (any one indicators (any one indicators (any one indicators) Water Table (A2) tion (A3) Marks (B1) (Nonriverient Deposits (B2) (Nonriverient Deposits (B3) (Nonriverient Deposits (B3) (Nonriverient Deposits (B6) (Nonriverient Depos	nd gritty, part once ator is suf	gravel/gremoved	Salt Crust Biotic Crust Aquatic In Hydrogen Oxidized F Presence Recent Iro	(B11) st (B12) vertebrate Sulfide Oc Rhizosphe of Reduce n Reducti	ize to granilar to the state of	ape-sized hose wit Living Ro	om soil rdd, some rhin the w	Secondar Water Drift C Drain Crayf Satur Shalka	1-7 inches to bedrock, un les in top 2-3 inches, dry but dry and lacking orga y Indicators (2 or more requ r Marks (B1) (Riverine) nent Deposits (B2) (Riverine) age Patterns (B10) ieason Water Table (C2) Muck Surface (C7) ish Burrows (C8) ation Visible on Aerial Imag	uiform y/no nic uired)
YDROLC YUROLC Wetland H Primary Inc Surfac High W Satura Water Sedim Drift Dr Surfac Inunda Water- Field Obse	I-inch approximate hroughout, sandy at structure, soil fell apparter OGY ydrology Indicators: dicators (any one indicators (any one indicators) dater Table (A2) tion (A3) Marks (B1) (Nonriverient Deposits (B2) (Nonriverient Deposits (B3) (Nonriverient Deposits (B6) (Nonriverient	nd gritty, part once ator is suf ne) nriverine) magery (E	gravel/gremoved	Salt Crust Biotic Crust Aquatic In Hydrogen Oxidized F Presence Recent Irc Other (Exp	irdseed sts felt sin (B11) st (B12) vertebrate Sulfide Oc Rhizosphe of Reduce n Reductio	ize to granilar to the state of	ape-sized hose wit Living Ro	om soil rdd, some rhin the w	Secondar Water Drift C Drain Crayf Satur Shalka	por Tinches to bedrock, unles in top 2-3 inches, dry but dry and lacking organ and lacking organ y Indicators (2 or more requir Marks (B1) (Riverine) ment Deposits (B2) (Riverine) age Patterns (B10) leason Water Table (C2) Muck Surface (C7) ish Burrows (C8) ation Visible on Aerial Imagow Aquitard (D3)	uiform y/no nic uired)
YDROLC Wetland H Primary Inc Surface High W Satura Water Sedim Drift Do Surface Inunda Water- Gurface Water Surface Water	I-inch approximate hroughout, sandy at structure, soil fell approximate hroughout, sandy at structure, soil fell approximation of the structure, soil fell a	ne) nriverine) magery (E	gravel/gremoved	Salt Crust Biotic Crust Aquatic In Hydrogen Oxidized F Presence Recent Irc Other (Exp	(B11) st (B12) vertebrate Sulfide Oc Rhizosphe of Reduce n Reductio	ize to granilar to the state of	ape-sized hose wit Living Ro	om soil rdd, some rhin the w	Secondar Water Drift C Drain Crayf Satur Shalka	por Tinches to bedrock, unles in top 2-3 inches, dry but dry and lacking organ and lacking organ y Indicators (2 or more requir Marks (B1) (Riverine) ment Deposits (B2) (Riverine) age Patterns (B10) leason Water Table (C2) Muck Surface (C7) ish Burrows (C8) ation Visible on Aerial Imagow Aquitard (D3)	uiform y/no nic uired)
Remarks: 1 S YDROLU Wetland H Primary Inc Surfac High W Satura Water Sedim Drift D Surfac Inunda Water- Field Obse Surface Wa Water Table Saturation includes c: Describe R	I-inch approximate throughout, sandy at structure, soil fell approximate tructure, soil fell approximater. OGY ydrology Indicators: dicators (any one indicators (any one indicators (any one indicators)) water Table (A2) tion (A3) Marks (B1) (Nonriverient Deposits (B2) (Nonriverient Deposits (B3) (Nonriveries Soil Cracks (B6)) tion Visible on Aerial I Stained Leaves (B9) cravations: ater Present? Y	ne) nriverine) magery (E	gravel/gremoved	Salt Crust Biotic Crus Aquatic In Hydrogen Oxidized F Presence Recent Irc Other (Exp	(B11) st (B12) vertebrate Sulfide Oc Rhizosphe of Reduction ches): ches):	ize to granilar to the state of	Living Ro	om soil pd., some phin the w	Secondar Secondar Secondar Sedin Drift [Drain: Crayfi Satur Shalk FAC-	por Tinches to bedrock, unles in top 2-3 inches, dry but dry and lacking organ and lacking organ y Indicators (2 or more requir Marks (B1) (Riverine) ment Deposits (B2) (Riverine) age Patterns (B10) leason Water Table (C2) Muck Surface (C7) ish Burrows (C8) ation Visible on Aerial Imagow Aquitard (D3)	iform y/no nic ired) ery (C9
Remarks: 1 S YDROLU Wetland H Primary Inc Surfac High W Satura Drift D Surfac Inunda Water- Field Obse Surface Water Table Saturation includes c: Describe R	I-inch approximate throughout, sandy an structure, soil fell approximate tructure, soil fell approximate. OGY ydrology Indicators: dicators (any one indicate (A1) Water Table (A2) tion (A3) Marks (B1) (Nonriverient Deposits (B2) (Nonriverient Deposits (B3) (Nonriverient October (B3) (Nonr	ne) nriverine) magery (E	gravel/gremoved	Salt Crust Biotic Crus Aquatic In Hydrogen Oxidized F Presence Recent Irc Other (Exp	(B11) st (B12) vertebrate Sulfide Oc Rhizosphe of Reduction ches): ches):	ize to granilar to the state of	Living Ro	om soil pd., some phin the w	Secondar Secondar Secondar Sedin Drift [Drain: Crayfi Satur Shalk FAC-	Inches to bedrock, unles in top 2-3 inches, dry but dry and lacking organ but dry and lacking organ y Indicators (2 or more requirement Deposits (B1) (Riverine) and personal (Riverine) are Patterns (B10) season Water Table (C2) Muck Surface (C7) sish Burrows (C8) ation Visible on Aerial Imagow Aquitard (D3) Neutral Test (D5)	iform y/no nic ired) ery (C9
YDROLO Wetland H Primary Inc Surface High W Satura Water Sedim Drift Do Surface Inunda Water- Field Obse Surface Wa Water Tabl Saturation (includes of	I-inch approximate throughout, sandy an structure, soil fell approximate tructure, soil fell approximate. OGY ydrology Indicators: dicators (any one indicate (A1) Water Table (A2) tion (A3) Marks (B1) (Nonriverient Deposits (B2) (Nonriverient Deposits (B3) (Nonriverient October (B3) (Nonr	ne) nriverine) magery (E	gravel/gremoved	Salt Crust Biotic Crus Aquatic In Hydrogen Oxidized F Presence Recent Irc Other (Exp	(B11) st (B12) vertebrate Sulfide Oc Rhizosphe of Reduction ches): ches):	ize to granilar to the state of	Living Ro	om soil pd., some phin the w	Secondar Secondar Secondar Sedin Drift [Drain: Crayfi Satur Shalk FAC-	Inches to bedrock, unles in top 2-3 inches, dry but dry and lacking organ but dry and lacking organ y Indicators (2 or more requirement Deposits (B1) (Riverine) and personal (Riverine) are Patterns (B10) season Water Table (C2) Muck Surface (C7) sish Burrows (C8) ation Visible on Aerial Imagow Aquitard (D3) Neutral Test (D5)	iform y/no nic ired) ery (C9

Project/Site: TA-55 Middle Mortandad	Mesa		City/Cou	unty:LosAlam	os/LosAlamos	Sai	mpling Date:	06-15-20	21
Applicant/Owner:LANL/DOE					State:NM	Sar	mpling Point:	: 5	
Investigator(s):Jesse Berryhill, Brent T.	hompson, Faith	Doty, A	Section	, Township, Ra	ange:R06E T19N				
Landform (hillslope, terrace, etc.): mesa to	pp/bench		Local re	elief (concave,	convex, none):none		SI	ope (%): ~	20
Subregion (LRR):D - Interior Deserts	The count was observed.	Lat:35.3	86		Long:-106.301			um:NAD	2001 11
Soil Map Unit Name: USDA NRCS Wel	o Soil Survey: N		70090277		-0	ssificatio	n:None List		
Are climatic / hydrologic conditions on the	1011 to 10 101111 101111	29752 ES	aar? Vac	No (<u> </u>	
							95	S No.	
Are Vegetation Soil Or Hydi		gnificantly			"Normal Circumstanc			No	~
Are Vegetation Soil or Hydi		aturally pr			eeded, explain any ar			ooturoo	oto
SUMMARY OF FINDINGS - Atta	cii site map s	nowing	Samp	inig ponit i	ocations, transe	CtS, IIII	portant it	satures,	eic.
Hydrophytic Vegetation Present?	Yes 🕟 No	0							
Hydric Soil Present?	Yes 🕟 No	0	l	s the Sample	d Area				
Wetland Hydrology Present?		0		within a Wetla			No 🔘		
Remarks:Soil sample taken north of									
urbanized area of TA-55. T				-		a and ur	idisturbed a	ırea. Past	
disturbances include asphal	t paving, structu	ıres, fill/g	gravel, a	and building	debris.				
VEGETATION									
Tree Stratum (Use scientific names.)		Absolute % Cover	Domina Specie	ant Indicator s? Status	Dominance Test	workshe	et:		
1.Pinus ponderosa	9-	15	Yes	FACU	Number of Domina That Are OBL, FAC		2002	1 ((A)
2.Ulmus pumila		$\frac{13}{10}$	No	NI NI	300 70 70 70 70 70 70 70 70 70 70 70 70 7		٦٠.	1 (<i>(</i> 2)
3. Eleagnus angustifolia		8	No	FACW	Total Number of D Species Across All			3 ((B)
4.					- Opecies Across Air	Ollata.)	(تا
T	Total Cover	33 %	-		Percent of Domina That Are OBL, FA		222	22 0 (A (D)
Sapling/Shrub Stratum	Total Cover	. 33 70			IIIat Ale OBL, FAC	200, OI F/	40. 3.	3.3 % (A/B)
1.Prunus virginiana		10	No	FAC	Prevalence Index	worksh	eet:		
2.Salix irrorata		25	Yes	FACW*	Total % Cover	of:	-0 9	oly by:	2
3					OBL species	5	x 1 =	5	
4					FACW species	33	x 2 =	66	
5					FAC species	10	x 3 =	30	
Herb Stratum	Total Cover:	35 %			FACU species	15	x 4 =	60	
1.Graminoid spp.		10	Yes	NI	UPL species	20	x 5 =	100	(B)
2. Typha latifolia		5	No	OBL	_ Column Totals:	83	(A)	261	(B)
3.					Prevalence li	ndex = E	3/A =	3.14	
4.			-	_	Hydrophytic Vege	tation Ir	ndicators:		
5.			<u> </u>		Dominance Te	st is >50	%		
6.			5.9	 ;	Prevalence Inc	dex is ≤3	.0 ¹		
7.		-		-	Morphological				ıg
8.							on a separat		
ens sis son a	Total Cover:	15 %		_	Problematic H	yaropnyt	ic vegetation	ı (Explain)	!
Woody Vine Stratum					¹ Indicators of hydr	io coil or	d watland h	vdrology n	ouet
1			B*E	_	be present.	ic soil ai	iu wellaliu li	yurology II	iusi
2					16.3				
	Total Cover:	%			Hydrophytic Vegetation				
% Bare Ground in Herb Stratum 20	% Cover	of Biotic C	Crust	0 %	Present?	Yes 📵	No (\supset	
Remarks: Shaded and open understo	rv. lacking hvdr	ophytic l	herb/for	b componen	t, surface water flo	wing the	oughout.		
% Bare Ground in Herb Stratum 20 Remarks: Shaded and open understo	% Cover	of Biotic C	Crust		Vegetation Present?		~	× .	9 4
US Army Corps of Engineers									
US Army Corps of Engineers						Arid	West - Vers	ion 11-1-2	006

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SOIL								Sampling Point: 5
Profile Des	cription: (Describ	e to the de	pth need	ded to docur	nent the indicator	or confirm t	the absence o	of indicators.)
Depth	Matrix				r Features			
(inches)	Color (moist)	%	Cold	or (moist)	% Type¹	Loc ²	Texture ³	Remarks
0-4	10YR4/4-10YR	3/						(see Remarks)
					·			
			-		·			
	-	_	***			-		
		1,00	B.1.	-	A .	-		
			83	:	A 			
The state of the s	Concentration, D=D	A			² Location: PL=Por	10 Tolday		I, M=Matrix. am, Silt Loam, Silt, Loamy Sand, Sand
	es. Clay, Silty Clay Indicators: (Applic	3559				i, Clay Loain		r Problematic Hydric Soils:
Histoso		able to all L	ixixə, ariix	Sandy Redox				ick (A9) (LRR C)
50000 10 00	pipedon (A2)		-	Stripped Ma				ick (A10) (LRR B)
	listic (A3)		-	J. vo. 505	ky Mineral (F1)			d Vertic (F18)
0.83 83	en Sulfide (A4)		-	1973	ed Matrix (F2)			rent Material (TF2)
	ed Layers (A5) (LRI	R C)		Depleted M				Explain in Remarks)
	uck (A9) (LRR D)		-	***************************************	Surface (F6)			**************************************
	ed Below Dark Surf	ace (A11)	-		ark Surface (F7)			
	ark Surface (A12)	21.516) V 2.1511 1.2	-	The state of the s	ressions (F8)			
Notification of the second	Mucky Mineral (S1)		=	Vernal Pool	Section of the Control of the Contro		⁴ Indicators o	f hydrophytic vegetation and
- A	Gleyed Matrix (S4)			la .	850 12			ydrology must be present.
	Layer (if present)							5 NT-5
Type: Ro	nek							
3.0	nches): 4 inches		75				Hydric Soil F	Present? Yes • No
			41	- 1/C (1 T -46			
								ass and fine roots, more organic
								R 4/4 at the top, ranging to 10YR
3.	/l with depth, glo	eys in bott	om inch	i, colored at	2/5 Y K 3/0, reje	cted by roc	k at aproxima	ately 4-in.
YDROLO	OGY							
Wetland Hy	drology Indicator	s:					Second	lary Indicators (2 or more required)
Primary Indi	icators (any one inc	licator is su	fficient)				Wa	iter Marks (B1) (Riverine)
X Surface	Water (A1)			Salt Crust	(B11)		Se	diment Deposits (B2) (Riverine)
	ater Table (A2)		F	Biotic Crus				ft Deposits (B3) (Riverine)
X Saturat			F		vertebrates (B13)			ainage Patterns (B10)
	Marks (B1) (Nonriv	erine)	>		Sulfide Odor (C1)			y-Season Water Table (C2)
200 200	ent Deposits (B2) (N		-	•	Rhizospheres along	Living Poots		n Muck Surface (C7)
	50 5 5 5		,	100	of Reduced Iron (C			and an are
	eposits (B3) (Nonriv	/erine)	L		323	70		ayfish Burrows (C8)
1.0000000000000000000000000000000000000	Soil Cracks (B6)			Management of the control of the con	n Reduction in Plo	vea Soils (Ci		turation Visible on Aerial Imagery (C9)
	ion Visible on Aeria		B/)	Other (Exp	olain in Remarks)			allow Aquitard (D3)
	Stained Leaves (B9)				-	FA	C-Neutral Test (D5)
Field Obse				0.000				
Surface Wa	ter Present?	Yes 📵	No (Depth (in	ches):			
Nater Table	Present?	Yes 🕡	No (Depth (in	ches): 0-3 in			
Saturation F	Present? pillary fringe)	Yes 📵	No 🔘	Depth (in	ches): Througho	ut Wetlar	nd Hydrology	Present? Yes No
	ecorded Data (strea	ım gauge, n	nonitorino	g well, aerial i	photos, previous in			
	utfall 03A181 flo	7775	one and a transfer of the State State Confession	uurum kamakan liikhtiganayanaki soosi Pikil∎				
Remarks:								
nemarks.								